

REMARKS

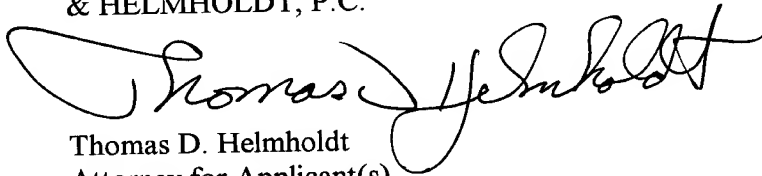
After entry of this amendment claims 1-28 are pending in the application. Claims 1, 6, 8, 12-15, 17-19, 23, 25, and 27 have been amended to remove terminology relating to "cantilevered" and correct antecedent basis for terminology relating to "chamber" and "bore" in the claims objected to by the Examiner under 35 U.S.C. §112, first and second paragraph. These amendments simplify the issues on appeal, and do not add any new subject to the application, and do not require any additional searching on the part of the Examiner.

It is submitted that this Amendment has antecedent basis in the application as originally filed, including the specification, claims and drawings, and that this Amendment does not add any new subject matter to the application. It is respectfully submitted that this Amendment places the application in better condition for appeal.

If the Examiner feels that prosecution of the present application can be expedited by way of an Examiner's amendment, the Examiner is invited to contact the Applicant's attorney at the telephone number listed below.

Respectfully submitted,

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TDH/cmp

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the claims:

1. (Twice Amended) In a motor/gear drive having a [cantilevered] shaft with a worm gear carried thereon and a free tip end portion with an outer diameter terminating in an end wall, and a housing having a bore formed coaxial with respect to the shaft to be installed therein, the improvement comprising:

a plastic annular sleeve within the bore of the housing concentrically disposed to be positionable about the outer diameter of the tip end portion of the shaft to be installed and to be nominally spaced radially from the outer diameter of the tip end portion, and wherein the sleeve is operable to supportingly engage the outer diameter of the tip end portion of the shaft only in response to radial loads acting to deflect the shaft into contact with the annular sleeve.

6. (Twice Amended) In a motor/gear drive having a [cantilevered] shaft with a worm gear carried thereon and a free tip end portion with an outer diameter terminating in an end wall, a housing having a bore formed coaxial with respect to the shaft to be installed therein, the improvement comprising:

a plastic thrust member within the bore of the housing disposed to be in coaxial registry with the end wall of the shaft to be installed, and operable to be in engagement with the end wall of the shaft to be installed to prevent axial movement of the shaft.

8. (Twice Amended) A method for manufacturing a motor/gear drive having a [cantilevered] shaft with a worm gear carried thereon, and a free tip end

portion with an outer diameter terminating in an end wall, and a housing having a bore formed coaxial with respect to the shaft to be installed therein, the method comprising the steps of:

inserting a mold core into the bore of the housing, the mold core having a first end portion with a diameter larger than the outer diameter of the free tip end portion of the shaft and a second larger diameter portion with a shoulder formed between the first and second portions sealingly closing a first portion of the bore in the housing, the first portion of the bore in the housing and the first end portion of the mold core forming an interior cavity therebetween;

injecting molten plastic into the interior cavity through a first gate to form a sleeve having an inner diameter surface surrounding a hollow bore; and

removing the mold core.

12. (Twice Amended) A method for manufacturing a motor/gear drive having a [cantilevered] shaft with a worm gear carried thereon, and a free tip end portion with an outer diameter terminating in an end wall, a housing having a bore formed coaxial with respect to the shaft to be installed therein, the method comprising the steps of:

forming a gate in the housing communicating with one portion of the bore in the housing;

forming the end wall of the shaft with an outer diameter larger than the diameter of the one portion of the bore in the housing;

disposing the end wall of the shaft to sealingly close off an end of the one portion of the bore in the housing;

inserting the shaft into the housing with the free tip end portion of the shaft extending through another portion of the bore in the housing;

disposing the end wall of the shaft to sealing close the one portion of the bore in the housing; and

injecting molten plastic through the gate into the one portion of the bore in the housing to form a thrust member in the one portion of the bore in the housing in registry with the end wall of the shaft.

13. (Twice Amended) A method for manufacturing a motor/gear drive having a [cantilevered] shaft with a worm gear carried thereon, and a free tip end portion with an outer diameter terminating in an end wall, a housing having a bore formed coaxial with respect to the shaft to be installed therein, the method comprising the steps of:

forming the bore of the housing having a first bore portion of a first diameter; and

injection molding a sleeve in the first bore portion, the sleeve having a through bore with an inner diameter larger than the outer diameter of a free tip end portion of the shaft.

14. (Twice Amended) A method for manufacturing a motor/gear drive having a [cantilevered] shaft with a worm gear carried thereon, and a free tip end portion with an outer diameter terminating in an end wall, a housing having a bore formed coaxial with respect to the shaft to be installed therein, the method comprising the steps of:

forming the bore of the housing for receiving the free tip end portion of a shaft; and

injection molding a thrust member within the bore of the housing in registry with the tip end portion of the installed shaft, the thrust member limiting axial movement of the installed shaft.

15. (Amended) The improvement of claim 5 further comprising:

the thrust member injection molded after installation of the shaft, wherein a portion of the end wall of the shaft defines at least a portion of [the] a chamber to receive injected plastic forming the thrust member during injection molding.

17. (Amended) A motor/gear drive housing for enclosing a [cantilevered] shaft supporting a worm gear for engagement with a pinion gear, the [cantilevered] shaft having one end connectible to a prime mover and a free tip end portion with an outer diameter terminating in an end wall, the motor/gear drive housing comprising:

at least one peripheral wall defining an enclosed area with at least one open side, at least one aperture formed within the peripheral wall and engageable to encircle part of the free tip end portion of the [cantilevered] shaft to be installed; and

at least one injection molded plastic annular sleeve formed in situ within the aperture and having an inner diameter positionable to encircle the free tip end portion of the [cantilevered] shaft to be installed therethrough with at least some clearance therebetween, such that the annular sleeve is operable to supportingly

engage the outer diameter of the free tip end portion of the shaft only in response to radial loads acting to deflect the shaft into contact with the annular sleeve.

18. (Amended) The motor/gear drive housing of claim 17 further comprising:

an injection molded plastic thrust member formed in situ within the at least one aperture of the housing, the thrust member disposed to be in coaxial registry with the end wall of the shaft to be installed, and operable to be engageable with the end wall of the shaft to be installed to prevent axial movement of the shaft, the outer diameter of the free tip end portion of the shaft to be installed being larger than a diameter of the thrust member engageable with the end wall of the free tip end portion of the shaft, the thrust member injection molded after installation of the shaft, wherein a portion of the end wall of the shaft defines at least a portion of [the] a chamber to receive injected plastic forming the thrust member during injection molding.

19. (Amended) In a method for manufacturing a motor/gear drive housing for enclosing a [cantilevered] shaft supporting a worm gear for engagement with a pinion gear, the [cantilevered] shaft having one end connectible to a prime mover and a free tip end portion with an outer diameter terminating in an end wall, the housing having an aperture formed coaxial with respect to the shaft to be installed therein, the improvement comprising the steps of:

plastic injection molding at least one of an annular sleeve and a thrust member in situ within the aperture of the housing, wherein the plastic annular sleeve is positionable to be coaxially sheathing an outer diameter of the free tip end portion of the shaft to be installed and to be nominally spaced radially from the outer diameter of the free tip end portion of the shaft to be installed, the sleeve operable to

supportingly engage the outer diameter of the free tip end portion of the shaft only in response to radial loads acting to deflect the shaft into contact with the annular sleeve, and wherein the plastic thrust member is positionable to be in coaxial registry with the end wall of the shaft, and operable to be engageable with the end wall of the shaft to prevent axial movement of the shaft.

23. (Amended) A motor/gear drive housing manufactured according to the method of claim 19 for enclosing a [cantilevered] shaft supporting a worm gear for engagement with a pinion gear, the [cantilevered] shaft having one end connectible to a prime mover and a free tip end portion with an outer diameter terminating in an end wall, the housing having an aperture formed coaxial with respect to the shaft to be installed therein, the improvement comprising:

at least one of a plastic injection molded annular sleeve and a plastic injection molded thrust member formed in situ within the aperture of the housing, wherein the plastic annular sleeve is positionable to be coaxially sheathing the outer diameter of the free tip end portion of the shaft to be installed and to be nominally spaced radially from the outer diameter of the free tip end portion, the sleeve operable to supportingly engage the outer diameter of the free tip end portion of the shaft only in response to radial loads acting to deflect the shaft into contact with the annular sleeve, and wherein the plastic thrust member is positionable to be in coaxial registry with the end wall of the shaft, and operable to be engageable with the end wall of the shaft to prevent axial movement of the shaft.

25. (Amended) In a motor/gear drive housing for enclosing a [cantilevered] shaft supporting a worm gear for engagement with a pinion gear, the [cantilevered] shaft having one end connectible to a prime mover and a free tip end portion with an outer diameter terminating in an end wall, the housing having an

aperture formed coaxial with respect to the shaft to be installed therein, the improvement comprising:

at least one of a plastic injection molded annular sleeve and a plastic injection molded thrust member formed in situ within the aperture of the housing, wherein the plastic annular sleeve is positionable to be coaxially sheathing the outer diameter of the free tip end portion of the shaft to be installed and to be nominally spaced radially from the outer diameter of the free tip end portion, the sleeve operable to supportingly engage the outer diameter of the free tip end portion of the shaft only in response to radial loads acting to deflect the shaft into contact with the annular sleeve, and wherein the plastic thrust member is positionable to be in coaxial registry with the end wall of the shaft, and operable to be engageable with the end wall of the shaft to prevent axial movement of the shaft.

27. (Amended) The improvement of claim 1 further comprising:

the [aperture] bore having a first portion of a first diameter and an axially endmost, coaxial, second portion of a smaller diameter, a shoulder formed between the first and second portions, and a first gate formed in the housing communicating with the first portion.